

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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In re application of

MILLER, DAVID

Serial No.: 09 / 152815

Filed: 14 September 1998

For: PROGRAMMABLE SELF-OPERATING
COMPACT DISC DUPLICATION SYSTEM



Examiner: McCRAY, PAULA

Art Unit: 2754

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By Rolando P. Ponce

Sir:

INFORMATION DISCLOSURE STATEMENT
UNDER 37 C.F.R. §1.51
ACCOMPANYING PETITION TO MAKE SPECIAL
WITH PRELIMINARY AMENDMENT

This application is a continuation-in-part of application Serial No. 08/816,257. The originally filed application was deemed allowable with sixteen claims pending. The continuation-in-part included the 16 claims of the parent application, additional claims 17-25 directed to the parent system and claims 26-30 directed to the system with a printer. A

preliminary amendment clarifies claims 12 and 13 and adds claims 31-39.

The prior art referenced herein includes the three references cited by the Examiner in the parent application which was abandoned in favor of the pending application. Additionally, references located in a recent prior art search for the application and references considered relevant from searches in unrelated applications involving disk copying devices are provided. The closest references are the two circa 1996 fliers at the end of the patent reference list and the three patents: Hollerich, Patent No. 5,946,216; Lee, et al., Patent No. 5,914,918; and Dennis, Patent No. 5,291,465.

PATENTS

Hollerich, Patent No. 5,946,216, issued 31 August 1999 discloses a vertical transport device for recording compact disks and includes a printing station and a recording station. The system of Hollerich has a robot arm that is vertically displaceable on a screw. Disks are retrieved from a first stack of disks in a disk holder that is mounted on a slidable tray raised above one or more of the printing and/or recording devices, having extendable/retractable trays and deposited on a discard disk stack on the slidable tray. The arm has a disk picker of a mechanical type.

Lee, et al., Patent No. 5,914,918, issued 22 June 1999 discloses a disk transporter having a carriage for transporting compact disks between moveable bins, a printer and a recorder. In the device of Lee, et al., the apparatus again utilizes a disk arm that is part of a carriage that vertically tracks on a pair of guide shafts and includes a disk gripper mechanism with three expandable and contractible fingers that are apparently similar to those described in Hollerich. Disks are stored on a carousel turntable that is rotatably mounted to the base and includes three compact disk bins. This patent apparently describes the device shown in the "Rimage" brochure that is also cited in this statement.

Costas, Patent No. 5,873,692, issued 23 February 1999 discloses a compact disk picker that is used for extracting the top disk in a disk stack through its center bore using three picker rods. The device also shows a horizontally displaceable carriage for moving a disk between two compact disk recording units.

Menke, et al., Patent No. 5,841,744, issued 24 November 1998 discloses a transport mechanism for disk magazines. The apparatus uses a horizontal shuttle mechanism and in the embodiment of Fig. 20 and Fig. 21

it appears that the shuttle mechanism is on a vertical elevator device to extract magazines from vertically oriented stacks.

Kaneko, et al., Patent No. 5,802,020, issued 1 September 1998 discloses an optical disk device having a plurality of record and playback units and utilizes a vertical elevator device for raising and lowering disks from an overhead storage rack to a plurality of recorders and/or players.

Yaegashi, Patent No. 5,796,684, issued 18 August 1998 discloses a disk duplicator system in which there are numerous disk copying devices that are interconnected by a controller system. The reference is relevant only for the use of multiple disk recording units controlled by a single control center.

Vishlitzky, Patent No. 5,724,321, issued 1 March 1998 discloses a storage cabinet having a plurality of orthogonal storage locations arranged in a matrix. The apparatus using a vertically moveable extractor for retrieving media from the storage location.

Suzuki, et al., Patent No. 5,640,535, issued 17 June 1997 discloses a library apparatus for duplicating disks and includes in one embodiment a carousel device that stores disk cartridges and has a mechanism for displacing the stacked cartridges on the carousel in the extractor or accessor mechanism being vertically moveable on a guide post. The disks can be moved from the stacks on the carousel to a drive unit or units under the carousel.

Soga, et al., Patent No. 5,610,893, issued 11 March 1997 discloses an information recording and reproducing apparatus for copying information from exchangeable master recording medium to a plurality of other exchangeable recording media. The apparatus transfers a subset of the target data to a data buffer before writing the data on each target disk. The apparatus does not verify the data transfer after the copy operation is complete. Hardware read/write failures are flagged during the copy operation and the apparatus ejects recording media that are successfully copied and retains recording media that are unsuccessfully copied.

Pines, et al., Patent No. 5,586,094, issued 17 December 1996 discloses a disk playing apparatus in which a plurality of disks are stored on a

horizontal rack and a transfer arm engages opposite edges of a selected disk, the transfer arm being on a vertical displacement mechanism that moves the disk to a playing station. The lift mechanism and transfer mechanism utilize a screw transport for displacements.

Kahle, Patent No. 5,518,325, issued 21 May 1996 discloses a disk recording device in combination with a disk printing station. The reference is relevant for disclosing one type of apparatus for recording and printing compact disks.

Takagi, Patent No. 5,495,457, issued 27 February 1996 discloses a disk processing system using an apparatus for transfer of disks that is shown only schematically. In the schematic illustration of Fig. 1, an accessor 23 is displaceable on a vertical lift column to access one or more optical disk drives and/or one or more container cells. Details of the access mechanism are not disclosed.

Yamasaki, et al., Patent No. 5,481,514, issued 2 January 1996 discloses a disk recording and reproducing apparatus that transfers cartridge type disks that are stored in a tray stocker, the device utilizing a

vertically displaceable carriage and extraction device that travels over a horizontally displaceable recording unit. The recording unit shuttles between and left and right position to service the vertical displacement mechanism which accesses two side-by-side disk cartridge stacks.

Horie, Patent No. 5,473,589, issued 5 December 1995 discloses a control system for a disk copying device that ensures that a disk is detected in the recording medium. The apparatus is capable of performing a ready status in response to external loading request, as a method for reducing power consumption of the apparatus and to lengthen its working life. The apparatus has a controller that: (1) sets the apparatus in a ready state for a predetermined time interval after a recording medium is loaded, and (2) sets the apparatus in a non-ready state after the recording medium is loaded if no external read/write request has been detected during a pre-determined time interval.

Brugger, Patent No. 5,431,520, issued 11 July 1995 discloses a disk storage and retrieval mechanism in which a stack of disks are contained in a cylindrical storage structure that is accessible by a vertically displaceable access mechanism.

Ichikawa, et al., Patent No. 5,418,763, issued 23 May 1995 discloses a disk recording system having a series of disks stored in shelves of an optical disk shelf and accessed by a carrier to transport the disks to a player. The apparatus is shown only schematically and only vertical and horizontal displacements are utilized.

Dennis, Patent No. 5,291,465, issued 1 March 1994 discloses an automatic disk changer that utilizes a robot arm and discloses two embodiments one using a pivotal arm structure with a cam lift and the other with a pivotal disk carousel. In the embodiment with the pivotal robot arm, the shaft 60 supporting the robot arm 26 is mounted on a cam member 72 that rides on stationary cam follower 78 shown in Fig. 3. On rotation the arm 26 acts like an armature lifting and lowering at predetermined locations as defined by the cam member 72. This mechanism does not allow independent vertical movement along the tower axis.

Nagahisa, et al., Patent No. 5,173,889, issued 22 December 1992 discloses a multi-loaded disk drive arrangement utilizing a carousel for

storing disks that are loaded to a player using a shuttle mechanism. The reference is pertinent for showing a rotary disk storage system.

Funabashi, et al., Patent No. 5,121,379, issued 9 June 1992 discloses a dual side disk player having separate centering hubs for each side of the disk. The utility of the invention is dependent on the assumption that a double-sided disk is constructed by affixing two one-sided disks together.

Fushimi, Patent No. 5,101,388, issued 31 March 1992 discloses a disk player system with an automatic magazine changer. Disks are stored inside a magazine changing unit in a vertical array, the magazine changing unit being removeably connected to a disk player body.

Geiger, et al., Patent No. 5,099,465, issued 24 March 1992 discloses a compact disk changer with a magazine and a playback section that are moveable relative to each other. Disks are stored inside a magazine in a vertical array and are inserted and ejected horizontally from the magazine. A playback section having a horizontal turntable is positioned alongside the magazine and travels along a vertical axis to properly accept or remove a disk from the turntable.

Kawakami, et al., Patent No. 5,058,095, issued 15 October 1991 discloses an automatic loading and driving record medium player. Record media such as compact disks are raised and lowered onto the turntable through a set of gear members and clutch members connected to the turntable motor.

Fitzgerald, et al., Patent No. 5,056,073, issued 8 October 1991 discloses an optical disk cartridge handling system. Disks are permanently stored inside the system in cartridges that are transported to one of two stationary optical disk drives.

Oliver, et al., Patent No. 5,040,159, issued 13 August 1991 discloses the mechanical sense of touch in a control system. Optical disk cartridges are transferred from holding cells to an optical drive in an autochanger by two control systems. The control systems direct the six motions the movement mechanism make to effect the transfer. The two control systems use control motor shaft encoders and current and voltage feedback to direct the movement mechanisms.

Tomita, Patent No. 5,036,503, issued 30 July 1991 discloses a disk recording/playback apparatus with an automatic changer. Disks are stored inside the apparatus in cartridges in a vertical array, and a disk reader travels vertically parallel to the aperture in each cartridge allowing for transfer of any disk from its cartridge into the disk reader. The disk reader is mounted on a spindle that pivots the disk reader 180 degrees so that information can be read from both sides of each disk.

Kobayashi, et al., Patent No. 5,033,038, issued 16 July 1991 discloses an automatic disk exchange device. Disks are permanently stored inside the device in a vertical array and are transported to a stationary disk recording/reproducing device located below the vertical array.

Kuo, Patent No. 4,989,191, issued 29 January 1991 discloses a matrix style accessing system for retrieving tape cassettes. The device having a vertical and horizontal translation mechanism for accessing any one of the tape compartments with a picker mechanism.

Korn, et al., Patent No. 4,766,581, issued 23 August 1988 discloses a system for accessing disk cartridges from a video disk magazine for play.

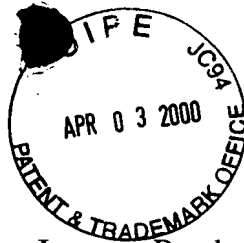
The system utilizes a picker mechanism that is displaced on a vertical access by a cable system, the picker arm having a retraction mechanism that also rotates 90° for reorienting disk cartridges for play.

Martin, Patent No. 4,685,001, issued 4 August 1987 discloses a disk archiving system for storage of disks in a rack that are extracted by a picker mechanism for play. The mechanism for selecting and removing disks is disclosed only schematically.

Corbett, et al., Patent No. 3,976,301, issued 24 August 1976 discloses a record selector mechanism for a phonographic system in which a vertical disk storage system is accessed by a displaceable player system for playing any one of the selected disks in the stack. The player mechanism has a player arm that moves into the rotating disk stack on play.

Lipski, Patent No. 3,176,922, issued 5 April 1965 discloses a record feed mechanism that displaces the lower most record in a stack to a pickup and play mechanism that is positioned adjacent the record stacking container. The reference is relevant for showing a disk stacking magazine.

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Rimage, "Perfect Image Producer" circa 1996 product brochure, discloses a disk printer with a carousel disk storage mechanism that cooperates with a vertical lift mechanism. The brochure is believed to describe the copier of U.S. Patent No. 5,914,918 above.

MicroTech, "Image Automator" circa 1996 product brochure, discloses an automatic CD-R duplicator device. The rendering shows a series of radially disposed disk recorders with a pivotal robot arm, the disks on the disk storage spindles being lifted up to the robot arm by a mechanism that is not clearly shown.

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Respectfully submitted,

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